

Pacific Air Forces

Integrity - Service - Excellence

JTWC - A PACAF Perspective



**Mr John H. Feckter
HQ PACAF/A30A**

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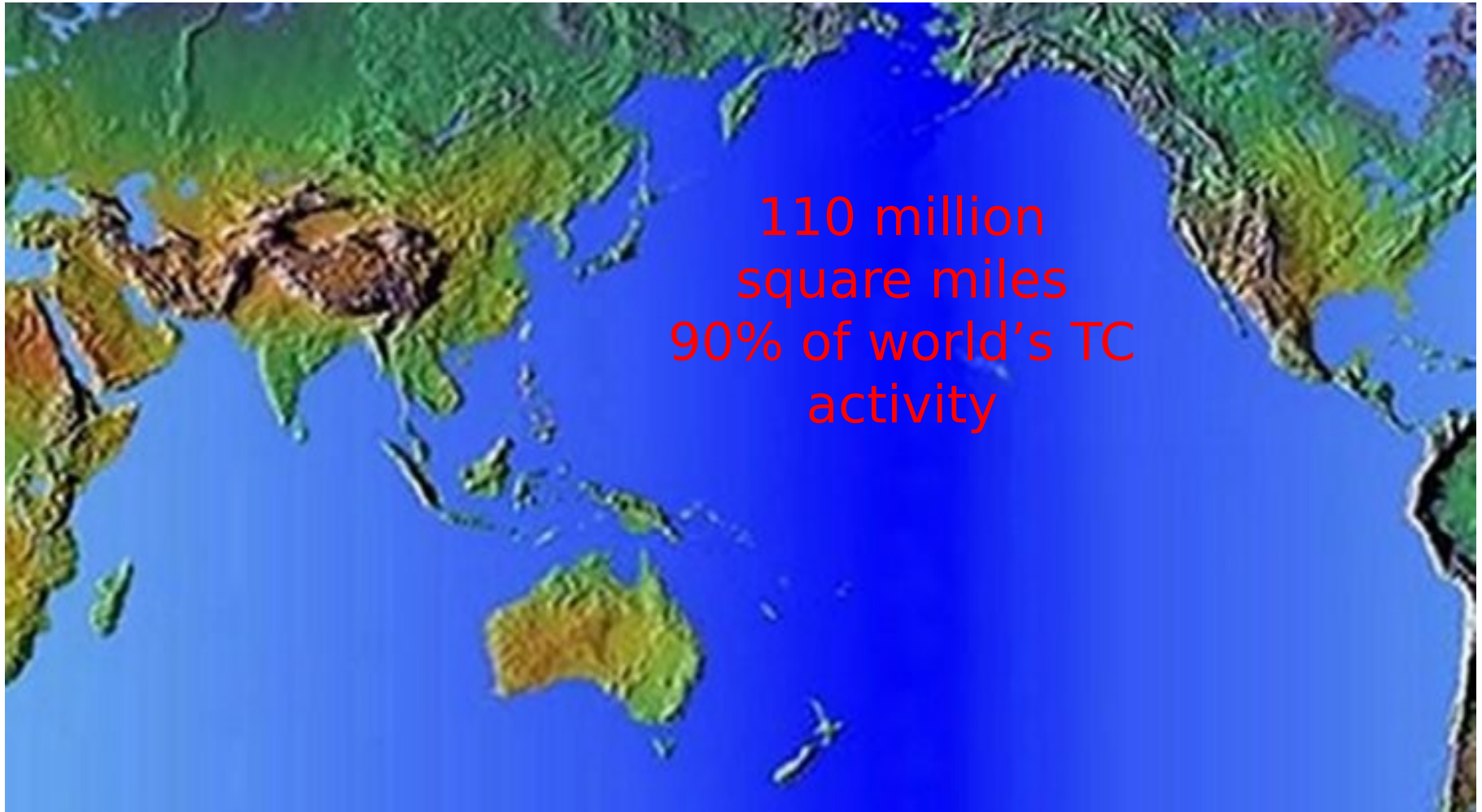
Overview

- **PACAF AOR**
- **PACAF/A3OA Weather Functional Responsibilities**
- **Use of JTWC Products in PACAF**
- **PACAF/A3OA Role in Improving the TC Forecast Process**
- **JTWC Operational Priorities, Need for Research Community Help**
- **A Challenge**



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The AOR



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Responsibilities to JTWC

- **Organize, train, and equip Air Force contribution to JTWC so they can deliver accurate, relevant and timely environmental information, products and services.**
 - **Funding Advocacy**
 - **Manning**
 - **Assignment actions**
 - **Advanced Academic Degree advocacy (one AAD active duty billet remains)**
 - **Manpower**
 - **Mil-to-Civ Typhoon Duty Officer conversions (eliminated several active duty AAD billets)**
 - **Systems Advocacy**
 - **Coordinate and advocate for increased MARK IV B capability to meet TC Reconnaissance requirements**



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PACAF Employment of JTWC Products

- **Mission Planning and Execution**
 - **WFs incorporate into Mission Execution Forecast Process**
 - **Tanker Airlift Control Center and Air Mobility Division incorporate TC threat into Integrated Flight Management**
- **Resource Protection**
 - **17 OWS produces TC-TAP (Tropical Cyclone-Threat Assessment Product) from JTWC bulletins**
 - **Onset/duration of sig winds, X-winds, 50 kt winds, precip**
 - **Max sustained winds and gusts**
 - **Closest Point of Approach**
 - **JTWC Warnings and TC-TAP support setting of TC-COR (Tropical Cyclone Condition of Readiness)**
 - **WFs brief TC-TAP to support installation-level decisions on a/c evac, protection/sheltering of personnel and property**



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PACAF Role in Improving the TC Forecast Process

- **Validate requirements from JTWC**
- **Annual call for AFIT thesis topics; they do get operationalized into JTWC processes:**
 - **Patla's dissertation "Influence of TUTT Cells on Track and Intensity of Tropical Cyclones"**
 - **Payne and Kehoe's work on "Ensemble-based Confidence Assessments for Tropical Cyclone Forecasts"**
- **Facilitate AF participation in multi-agency/international research projects (e.g., T-PARC)**



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2007-2009 AFIT Thesis Topics

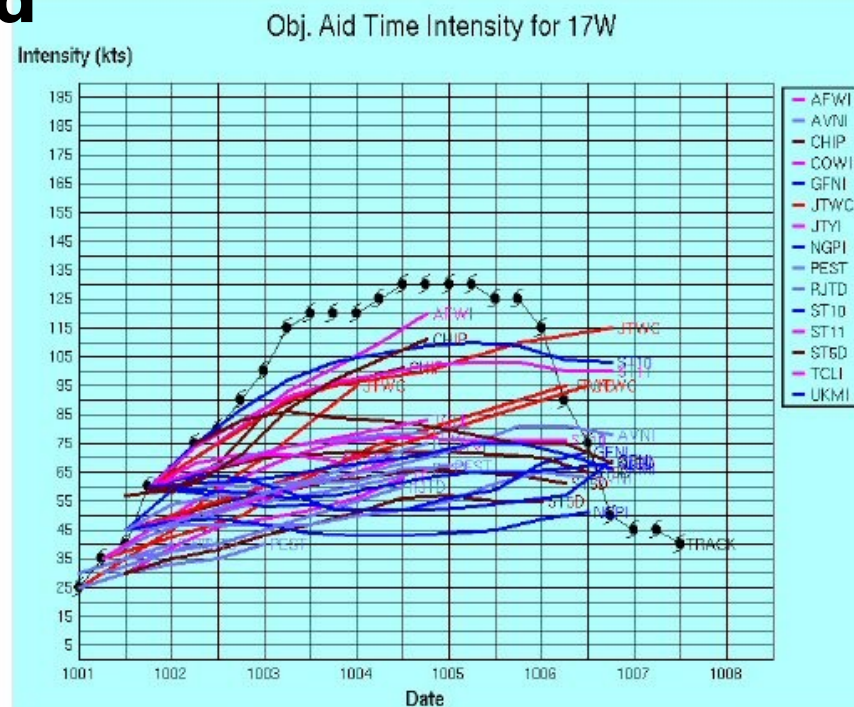
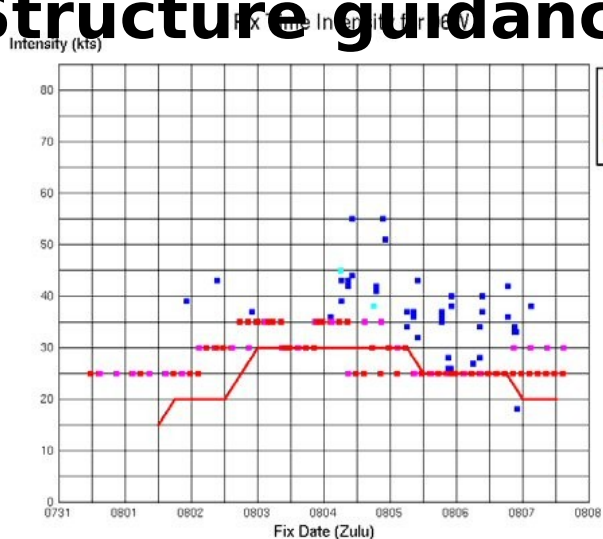
- **The dynamics and physics of intense hurricanes using in-situ data from TCS-08 and other storms: Superintensity and Secondary Eyewall Formation**
- **The Impact of Dropwindsonde Data on Typhoon Track Forecasts during the T-PARC Exercise.**
- **Global model forecasts of 2005 Atlantic tropical cyclone formations after post-processing to account for initial intensity**
- **The role of subtropical intrusion in the development of Typhoon Usagi (5W) 2007**
- **Downstream impacts due to the extratropical transition of tropical cyclones over the western North Pacific**
- **A weighted consensus approach to tropical cyclone 96-H and 120-H track forecasting**
- **Assessment of tropical cyclone-related forecast uncertainties using a prototype ensemble prediction**



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JTWC Operational Priorities

- Intensity guidance/rapid intensification
- TC/environmental characterization
- Genesis guidance
- Structure guidance



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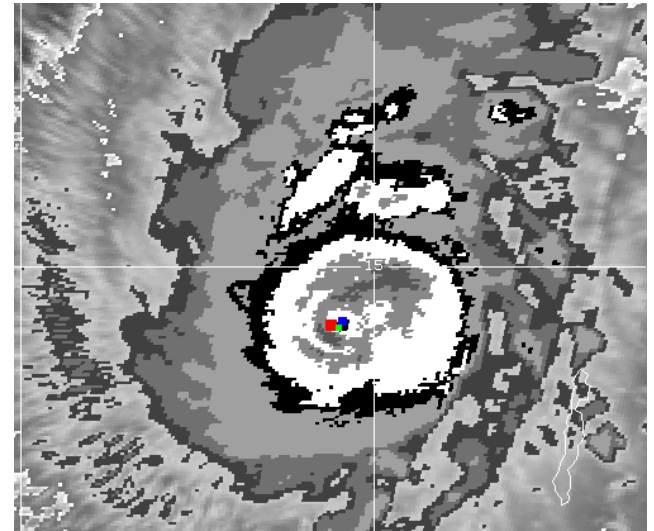
Research Community Help

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Need research community support

■ Top priority is intensity/structure...need improved:

- **Specification of cyclone structure (wind strength and distribution)**
- **Satellite-based intensity/structure estimates**
- **Forecast techniques for cyclone intensity/structure changes over time**



■ Climate change influence on cyclone tracks / intensities

- **Impacts on strategic / failing states (e.g., Africa, Indian Ocean)**

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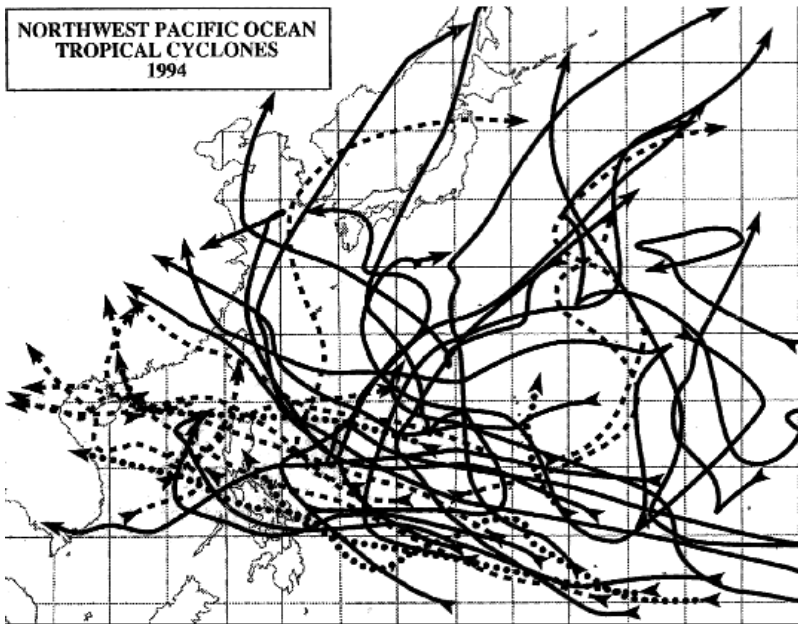


Summary and a Challenge

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- Typhoon warning capability critical to warfighters in Pacific/IO
- Must continue to work *JOINTLY* to improve forecast and warning accuracy
- Will take research and operational focus using technology as the enabler

NORTHWEST PACIFIC OCEAN
TROPICAL CYCLONES
1994



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Questions?

E-Mail:

john.feckter@hickam.af.mil

DSN (315) 448-1482

Comm (808) 448-1482